

Listing of Claims:

1. (Currently amended) A device for voice activity detection, comprising:
a sound signal analyser ~~arranged~~ configured to determine whether a sound signal comprises speech, comprising:
a microphone system (~~2a, 2b, 2c, 2d, 2e~~) ~~arranged~~ configured to discriminate sounds emanating from sources located in different directions from the microphone system, ~~characterised in that wherein the device is adapted~~ microphone system is configured to determine the direction of a sound source causing sound signals, [[:]] and is ~~adapted~~ configured to further analyse the sound to determine whether the sound signal comprises speech, if the sounds emanate from a first range of directions, [[:]] but to decide that the sound signal does not comprise speech, if the sounds emanate from a second, different range of directions.
2. (Currently amended) A device according to claim 1, ~~characterised in that wherein~~ the first range of directions is directed in ~~the~~ a direction of an intended user's mouth (3).
3. (Currently amended) A device according to claim 2, ~~characterised in that wherein~~ the microphone system comprises two microphone elements (~~2a, 2b~~) separated a distance and located on a line directed in the direction of an intended user's mouth (3).
4. (Currently amended) A device according to claim 3, ~~characterised in that wherein~~ the first range of directions is defined as an area ~~all sounds~~ falling inside a cone with a cone angle α , wherein $10^\circ < \alpha < 30^\circ$.
5. (Currently amended) A device according to claim 4, ~~characterised in that wherein~~ α is approximately 25° .

6. (Currently amended) A device according to claim 2, ~~characterised in that~~ wherein the microphone system comprises three microphone elements (2b, 2c, 2d) separated a distance and located in a plane directed in the direction of an intended user's mouth (3).

7. (Currently amended) A device according to claim 6, ~~characterised in that~~ wherein two (2c, 2d) of said three microphone elements are separated a distance and located on a line directed perpendicular to the direction of an intended user's mouth (3).

8. (Currently amended) A device according to claim 2, ~~characterised in that~~ wherein the microphone system comprises four microphone elements (2b, 2c, 2d, 2e), located such that the fourth microphone (2e) is not located in the same plane as the three others (2b, 2c, 2d).

9. (Currently amended) A device according to claim 3, ~~any one of claims 1 to 8,~~ ~~characterised in that~~ wherein the microphone elements (2a, 2b, 2c, 2d, 2e) are directional with a pattern having maximal sensitivity in the direction of an intended user's mouth (3).

10. (Currently amended) A device according to claim 1, ~~characterised in that~~ wherein the microphone system comprises one directional microphone element together with one or more other microphone elements ~~adapted~~ configured to remove the uncertainty in the direction of the sound source.

11. (Currently amended) A device according to ~~claims~~ claim 10, ~~characterised in that~~ wherein the directional microphone element is ~~adapted~~ configured to measure ~~the a~~ sound pressure level relative to the other microphone ~~element~~ elements.

12. (Currently amended) ~~A mobile apparatus, characterised in that it comprises a device as defined in any one of claims 1 to 11~~ A device according to claim 10, wherein the device is a mobile apparatus.

13. (Currently amended) A mobile apparatus according to claim 12, ~~characterised in that~~ wherein the microphone elements (~~2a, 2b, 2c, 2d~~) are located at a ~~the~~ lower edge of the apparatus.

14. (Currently amended) A mobile apparatus according to claim 12, ~~characterised in that~~ wherein a plurality of microphone elements (~~2a, 2b, 2c, 2d~~) are located at the lower edge of the apparatus and at least one ~~further~~ microphone element (~~2e~~) is located at a distance from the lower edge.

15. (Currently amended) A mobile apparatus according to any one of claims 12 to 14, ~~characterised in that~~ wherein the mobile apparatus comprises it is a mobile radio terminal, ~~e.g. a mobile telephone (1),~~ a pager, a communicator, an electric organiser and/or ~~or~~ a smartphone.

16. (Currently amended) An accessory for a mobile apparatus, comprising: ~~characterised in that in that it comprises a microphone system (2a, 2b, 2c, 2d, 2e) as defined in any one of claims 1 to 11.~~

a microphone system configured to discriminate sounds emanating from sources located in different directions from the microphone system, wherein the microphone system is configured to determine the direction of a sound source causing sound signals, and is configured to further analyse the sound to determine whether the sound signal comprises speech, if the sounds emanate from a first range of directions, but to decide that the sound signal does not comprise speech, if the sounds emanate from a second, different range of directions.

17. (Currently amended) An accessory according to claim 16, ~~characterised in that~~ wherein the direction of the first range of directions is adjustable.

18. (Currently amended) An accessory according to claim 16 ~~or 17~~, ~~characterised in that~~ wherein the accessory ~~in that~~ it is a hands-free kit.

19. (Currently amended) An accessory according to claim 16 ~~or 17~~, ~~characterised in that~~ wherein the accessory ~~in that~~ it is a telephone conference microphone.

20. (Currently amended) A method for voice activity detection, ~~characterised in that~~ comprising: by the steps of:

receiving sound signals from a microphone system (2a, 2b, 2c, 2d, 2e) arranged configured to discriminate sounds emanating from sources located in different directions from the microphone system;

determining the direction of the sound source causing the sound signals;

analyzing the sound signals to determine whether the sound signals comprise speech
if the ~~sounds~~ sound signals emanate from a first range of directions, ~~further analyse the sound to determine whether the sound signal comprises speech; and but if the sounds emanate from a second, different range of directions decide that the sound signal does not comprise speech.~~

determining that the sound signals do not comprise speech if the sound signals emanate from a second, different range of directions.

21. (Currently amended) A method according to claim 20, ~~characterised in that~~ wherein the first range of directions is directed in the direction of an intended user's mouth (3).

22. (Currently amended) A method according to claims 21, ~~characterised in that~~ wherein the first range of directions is defined as an area ~~all sounds~~ falling inside a cone with a cone angle α , wherein $10^\circ < \alpha < 30^\circ$.

23. (Currently amended) A method according to claims 22, ~~characterised in that~~ wherein α is approximately 25° .

24. (Currently amended) A method according to claim ~~any one of claims 22 or 23,~~
~~characterised in that~~ wherein the microphone system comprises at least two microphone
elements (~~2a, 2b~~) located at a distance d from each other and located on a line directed in the
direction of an intended user's mouth (~~3~~), ~~said two microphone elements being separated a~~
~~distance d,~~ wherein the direction to the sound source θ is calculated as

$$\theta = \arccos \frac{\Delta t \cdot v}{2 \cdot d}$$

where

Δt is ~~the~~ a time difference between the sounds from the two microphone elements,
 v is ~~the~~ a velocity of sound.

25. (Currently amended) A method according to ~~claims~~ claim 20, **characterised**
~~in that~~ further comprising:

using one directional microphone element ~~is used~~ together with one or more other
microphone elements to ~~remove the~~ reduce uncertainty in the direction of the sound source.

26. (Currently amended) A method according to ~~claims~~ claim 25, **characterised**
~~in that~~ further comprising:

using the directional microphone element ~~is used~~ to measure ~~the~~ a sound pressure
level relative to the other microphone element.